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Why are Kenyan Common Kestrels *Falco tinnunculus rufescens* so scarce? Clues from Lake Baringo

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Africa has a large diversity of birds of prey and, in the absence of first-world development and urbanization, many regions still have healthy raptor populations (Brown 1970). However, some anomalies still exist, such as the apparent scarcity of resident Common Kestrels *Falco tinnunculus rufescens* in East Africa (Brown 1980).

Common Kestrels have a wide distribution ranging over most of Africa, Europe and Asia. Eleven subspecies have been distinguished (Village 1990) and most are common in their ranges. *F. t. rufescens* has the widest distribution of the subspecies in Africa. It is found over west, central and east Africa excluding areas dominated by tropical rain forest.

We surveyed Common Kestrels along the cliffs near Lake Baringo in Kenya to investigate whether they were indeed scarce in suitable habitat as the literature suggests.

Study area and methods

Lake Baringo is a 168 km^2 freshwater lake situated in the Rift Valley in central Kenya (0°36¢N, 36°0¢E). The topography and habitats in the area have been described in detail by Stevenson (undated). Papyrus and other water-associated vegetation is found around the lake while *Acacia* woodland dominates the vegetation elsewhere. The climate is hot and dry, with a variable annual rainfall averaging 650 mm per year, most of which falls between April and August. The mean daily temperature ranges from an average minimum of 16.7°C to an average maximum of 32.5°C (data from 1957–1980, Kenya Meteorological Department 1984).

Basalt cliffs occur on both the eastern and western sides of the lake. This study focused on 9300 m of cliff near the main Marigat–Loruk road on the western side. Most of the cliff was suitable for breeding kestrels as it was high (mean = 43 m, SD 14.9, n = 17 sites), mainly vertical (71% of the cliff line) and with a high diversity (mean = 19 species/h) and abundance of birds (mean = 81 individuals/h).

The survey was conducted between 5 and 21 October 1995. A set of characteristics of the cliff, surrounding habitat and animal life (Table 1) were collected by one or two observers in the early morning or late afternoon from a number of equidistant positions along the cliff and notes were made on all raptors seen in the vicinity.

Results

Four pairs of kestrels and two unpaired individuals were resident on the cliffs, and used approximately 4370 m (47%) of the cliff length. This was the highest part of the cliff line (mean height 53 m, SD 11.5 m), was vertical and relatively free of trees growing out of the cliff. It had a dry river bed below it with high riverine woodland. Human presence (tourist birdwatchers, herdboys with stock and local people collecting water nearby) was relatively high at the base of the cliff. A pair of Lanner Falcons *Falco biarmicus* and Verreaux's Eagles *Aquila verreauxii* also nested on the section used by the kestrels.

Table 1: Parameters measured from predetermined points along the cliff near the Marigat–Loruk road

Cliff characteristics	
	Estimated height (to the nearest 5 m)
	Direction in which the cliff was facing
	Aspect of the cliff (estimated to the nearest 10 degrees)
	Continuity of the cliff (broken/not broken)
	Number of trees growing out of the cliff (on a scale of 1 to 3)
	Presence of a river below the cliff (yes/no)
	Presence of water below the cliff (yes/no)
	Visibility to left and right (estimated to the nearest 10 m)
Vegetation characteristics in the vicinity of the cliff	
	Habitat type (thornbush, riverine bush, low scrub)
	Ground cover (on a scale of 1 to 5)
	Presence of humans (on a scale of 1 to 3)
	Overall openness of the surrounding habitat (open/thick)
Bird population characteristics	
	Number of species seen
	Number of individuals seen
	Raptor species seen and how many of each
	Presence of a raptor nest on the cliff

Three kestrel pairs were seen copulating and courtship feeding. The presumed nest sites (holes or ledges where courtship displays took place) of the four pairs were confined to a section of 2500 m (28% of the available cliff) approximately in the middle of the cliff line. Distances between adjacent nest sites were 900 m, 300 m and 900 m.

There was no significant correlation between any of the environmental parameters measured and the use of the cliff by kestrels during this study (χ^2 test, $P > 0.05$), despite the kestrels choosing the highest section of cliff. Any preference could be diluted by the kestrels using less suitable parts of the cliff while moving to foraging areas away from the cliffs.

Discussion

The cliffs at Lake Baringo support a variety of cliff-nesting raptors, indicating good quality cliff habitat (Stevenson undated). Furthermore, the survey at the cliffs revealed a high diversity and abundance of potential prey. It would therefore be expected that competition would be high for nest sites. Common Kestrels have been known to nest very close together (Village 1990, Bustamante 1994) and it can be expected that this would happen in optimal situations or on isolated cliffs in suitable habitat. Inter-nest distances of Kenyan kestrels on the Lake Baringo cliffs were small, supporting the idea that kestrels were able to nest close to each other in an area with a limiting resource. However, the absence of kestrels over half of the cliff line meant that overall density for the area was much lower than in Europe (one pair per 2325 m in Kenya versus per. 1000–1500 m in Europe; Village 1990). These densities correspond with low densities found in an area where nesting sites were limited in South Africa (one pair per 2000–2500 m; van Zyl 1993). Furthermore, resident Common Kestrels are not often seen from Kenyan roads, unlike other countries (A. van Zyl, pers. obs.) and their distribution is limited to the eastern rocky habitats in Kenya (Lewis & Pomeroy 1989). Thus, this survey supports Brown's (1980) original finding that Common Kestrels are scarce in Kenya.

Why did kestrels not use the whole cliff line for breeding? No correlation was found between kestrel density and cliff habitat variables, either indicating that inappropriate parameters were measured or that most of the cliff was suitable for kestrel nesting. Part of the cliff was used by two unpaired individuals that possibly were unable to obtain mates. This would suggest that the number of kestrels in the population was low, with only a small floating population. Adding two more breeding pairs to the cliff would increase kestrel densities to the levels recorded in Europe.

Jenkins (1991) showed that there was a significant decline in Peregrine Falcon density with decrease in latitude. Peregrine Falcons in the tropics also selected higher cliffs than their temperate counterparts. Jenkins ascribed this to an increase in hunting success from the cliffs in areas were food availability was low. While Common Kestrels in this study seemed to select the highest section of cliff, they only hunted from the cliff occasionally, rather choosing to hunt from trees.

A possible explanation for the low density of kestrels and their selection of a particular section of the cliff could be predator avoidance, although there is only circumstantial evidence for this. Vervet Monkeys *Cercopithecus aethiops* have been recorded preying on birds (Smithers 1983) and were regularly seen foraging in the fig trees on the cliff face, even on vertical cliffs. On two occasions Vervet Monkeys chased kestrels that were perched in trees above the cliff, and on one occasion apparently attempting to catch the bird.

This short study suggests that in an area with good nesting habitat and food supply, kestrel densities are much lower than would be expected. Limiting factors such as food supply and nest site availability can be discounted. Predation pressures on breeding populations in Kenya may be high, thus limiting the availability of potential mates in the floating population.

References

Brown, L. 1970. *African Birds of Prey*. London: Collins.

Brown, L. 1980. *The African Fish Eagle*. London: Purnell.

Bustamante, J. 1994. Behavior of colonial Common Kestrels (*Falco tinnunculus*) during the post-fledging dependence period in southwestern Spain. *Journal of Raptor Research* 28: 79–83.

Jenkins, A. 1991. Latitudinal prey productivity and potential density in the Peregrine Falcon. *Gabar* 6: 20–24.

Lewis, A. & Pomeroy, D. 1989. *A bird atlas of Kenya*. Rotterdam: Balkema.

Smithers, R. H. N. 1983. *The mammals of the Southern African subregion*. Pretoria: University of Pretoria.

Stevenson, T. Undated. *The birds of Lake Baringo*. Nairobi: New World Printers.

van Zyl, A. J. Aspects of the ecology of the Southern African Kestrel (*Falco tinnunculus rupicolus*). Unpublished MSc thesis, University of Cape Town, Cape Town.

Village, A. 1990. *The Kestrel*. London: Poyser.

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